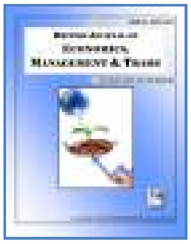

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Decision Theory and Its Relevance to Real Estate Development Decisions

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Authors' contributions

This work was carried out in collaboration between all authors. Author DID initiated the research work and worked together with all the other authors.

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ABSTRACT

The major purpose of this study is to critically examine decision theory with a view to identifying and evaluating its relevance to real estate development decisions. The theoretical research approach was adopted for this study. The study revealed that real estate development involves taking risk and is often characterized by great complexities and inherent uncertainties. The study showed that since resources are limited, a choice has to be made among the various real estate investment alternatives. The study further showed that decision theory is very much relevant in real estate development decisions because by assessing the risks, complexities and uncertainties associated with real estate development, the decision maker is better placed to make a more informed and "better" decision. It was recommended that real estate appraisers should familiarize themselves with the various relevant decision models appropriate for real estate development decision-making. This will help them to better serve their clients by making better decisions on viable real estate developmental projects.

Keywords: Decision theory; appraiser; development; real estate; investment; risk.

1. INTRODUCTION

One of the important aspects of financial management is proper decision-making in respect of investment of funds. Successful operation of any real estate developmental project

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depends upon the investment of resources in such a way as to bring in benefits or best possible returns from such investment(s). An investment can be simply defined as expenditure in cash or its equivalent during one or more time periods in anticipation of enjoying a net inflow of cash or its equivalent in some future time period or periods ([1], [2], [3]). Since resources are limited, a choice has to be made among the various investment proposals by evaluating their comparative merits and making decisions on the viability of such investment. This would facilitate the identification of relatively superior proposals keeping in mind the limited available resources ([4],[3], [5]).

It is now widely recognized that the decision to invest is a decision to exercise a real option and that many insights from the theory of financial options apply to real estate development decisions ([6,7]). Real estate development for investment purposes involves taking risk by the investor(s). A real estate development project starts with an available opportunity to construct a new building in which people can live, work, shop etc. This opportunity has to be developed from an idea into something real. At the moment a real estate developer takes a development opportunity, it has to manage risks pertaining to the acquisition of land, permits, the design and construction process, and of course the lease and sale of the completed real estate developmental project. Since risk is involved vis-à-vis alternative options, the investors have to make an informed decision before committing investment funds to any real estate developmental project.

The field of decision theory and its companion methodology of decision analysis come to play in the real estate sector by giving a glimpse of the merits of making viable decisions with respect to real estate investments. Decision theories as developed by philosophers, economists, and mathematicians over some 300 years, have been used by many disciplines, these disciplines have developed many powerful ideas and techniques, which exert major influence over virtually all the biological, cognitive, and social sciences. Their uses range from providing mathematical foundations for microeconomics to daily application in a range of fields of practice, including finance, public policy, medicine, real estate appraisal etc [8]. Every decision to invest in a real estate project implies that risks are to be taken, as risk taking is essential and unavoidable for real estate development. This study examined decision theories with respect to real estate development decisions. This will reveal how real estate development organizations and real estate appraisers have developed and institutionalized skills and procedures to deal successfully with the risky nature of real estate development decisions [9].

Hence, the major purpose of this study is to critically examine decision theory with a view to evaluating its relevance to real estate development decisions. With this in view, the paper addresses the following questions: What is decision theory? And how relevant is decision theory to real estate development decisions? The answers to these questions are central to identifying the relevance of decision theory to real estate development decisions and the proffering of viable recommendations for better decision making with respect to real estate development. The paper is organized as follows: the next section (2) reviews related literature, section three (3) presents the summary of findings, Conclusion and Recommendation.

2. REVIEW OF RELATED LITERATURE

Formal studies of decision making was said to have their origins in the seventeenth century, reaching a point of maturity in the mid and late 1940s with reasonably solid mathematical foundations and reasonably practical quantitative methods Just as it attained this maturity, however, Herbert Simon and others led an exodus from the new theory, charging it with requiring excessive information, memory, and reasoning power [8]. According to Jon and Richmond [8], decision theory and decision analysis provide answers to four main questions:

1. What Is a Decision? A decision is a choice made by some entity of an action from some set of alternative actions. Decision theory has nothing to say about actions—either about their nature or about how a set of them becomes available to the decision maker. The main branch of decision theory treats decisions of individual actors, and other branches treat decisions made by groups of individuals or groups of groups.

2. What Makes a Decision Good? A good decision identifies an alternative that the decision maker believes will prove at least as good as other alternative actions. Variant decision theories, provide different answers, such as calling a decision good if it identifies an alternative that the decision maker considers good enough, even if not as good as other alternatives that might have been found through further deliberation.

3. How Should One Formalize Evaluation of Decisions? Good decisions are formally characterized as actions that maximize expected utility, a notion involving both belief and goodness. Decision theory develops this notion in stages.

4. How Should One Formulate the Decision Problem Confronting a Decision Maker? One identifies alternatives, outcomes, probabilities, and utilities through an iterative process of hypothesizing, testing, and refining a sequence of tentative formulations.

2.1 Decision Theory: A Truly Interdisciplinary Subject

As noted earlier, modern decision theory has developed since the middle of the 20th century through contributions from several academic disciplines. Although it is now clearly an academic subject of its own right, decision theory is typically pursued by researchers who identify themselves as economists, real estate appraisers, statisticians, psychologists, political and social scientists or philosophers. A political scientist is likely to study voting rules and other aspects of collective decision-making. A psychologist is likely to study the behaviour of individuals in decisions, and a philosopher the requirements for rationality in decisions, while a real estate appraiser is likely to study the viability of different real estate development options. However, there is a large overlap, and the subject has gained from the variety of methods that researchers with different backgrounds have applied to the same or similar problems [10].

2.2 Decision Theory: Process and Models

Decision theory is theory about decisions [10]. Decision theory is the study of how people model "judgment" and from that how they determine their choice. These may be probability-based models; loss functions models or other forms of statistical representations of judgments ([11], [10]. Sven [10] identified the subdivision of the decision process as follows:

1. Identification of the problem
2. Obtaining necessary information
3. Production of possible solutions

4. Evaluation of such solutions
5. Selection of a strategy for performance and
6. Implementation of the decision

In a related study, Robert [12] identified different types of decision-making situations as: Single decisions under uncertainty; Sequences of decisions under uncertainty; Choice between incommensurable commodities; Choices involving the relative values a person assigns to payoffs at different moments in time and Decision making in social or group environments. Sven [10] and Robert [12] categorized decision theory as Normative and Descriptive. The Normative decision theory is concerned with identifying the best decision to make assuming an ideal decision maker who is: fully informed, able to compute with perfect accuracy and fully rational. While the Descriptive decision theory is concerned with describing what people actually do. The distinction between normative and descriptive decision theories is, in principle, very simple. A normative decision theory is a theory about how decisions should be made, and a descriptive theory is a theory about how decisions are actually made ([10,12]). French [13] identified a third model referred to as Prescriptive model. This model uses normative models to guide the decision maker within other limiting cognitive parameters.

2.3 Real Estate Development: Concept and Process

Real estate connotes land and other immoveable objects attached to land [14]. Real property also refers to the interests, benefits and inherent right in the ownership of the physical land. However, for the purpose of this study real estate or property means land and buildings, which are categorized into different types according to the various uses to which they are being put and for which they are designed. These uses include residential, commercial, industrial, agricultural, recreational etc.

Development on the other hand is the process of carrying out works involving a change in the physical use or in the intensity of an existing use of land or buildings [15]. The term 'development' as defined in section 2(1) of the Nigerian Town and Country Planning ordinance of 1948, states that "development in relation to any land includes any building or rebuilding operation and any use of land or any building thereon for a purpose which is different from the purpose for which the land or building was previously being used". Ogedengbe and Adesopo [16] pointed out that among the Architects, Planners, Engineers and Surveyors, the word development generally means "the process of carrying out construction involving a change in the intensity of the use of land or with a re-establishment ranging from the humble addition of a bedroom or a garage to a private house or the ambitious re-development of a city centre".

Real estate development can also be seen as the transformation of an idea for newly built space into a real property ([17,18,19]). Real estate development projects can take the form of the development of a new block of houses on former agricultural land, the transformation of former industry sites into a multifunctional centre with a combination of retail, residential and office buildings, or the redevelopment of a (part of the) city centre [9]. For any viable developmental project, an initial development appraisal for informed decision to be made is imperative.

A development appraisal is a method used by appraisers to decide whether a proposed development will be viable. In principle, the method of approach is to ascertain the capital value of an estimated future income (sale price of the completed development), and then to deduct from that the cost of all works needed to complete the development to a standard able to command such a future income. In essence it is a quantification of the development process to determine the value of some predetermined benchmark [11].

2.4 The Complex and Uncertain Nature of Real Estate Development

Real estate developments for various purposes are usually characterized by certain complexities and inherent uncertainties. Basically, there are four pointers that explain the nature of real estate development. First is its multidisciplinary character which is related to the many activities. These activities start with an idea for real estate development stimulated by an opportunity for investment or other useful ventures. The process continues with a thorough search for a suitable site. The investor or developer after the purchase of such site commissions designers, including an architect, an urban designer, and a structural and mechanical engineer to design the desired structure. It is important to note that obtaining approval of plans and a valid building permit is imperative. Once the permits have been granted, a building team is assembled which consists of: Architects, Building Engineers, Estate Surveyors, Land Surveyors, Quantity Surveyors etc. A competent contractor is then hired for the construction and the developer supervises it. In the meantime, the Estate Agent (Estate Surveyor and Valuer in Nigeria) initiate marketing activities for the sale or rental of the property as soon as the project is completed. All these activities are internally financed or have the backing of financial institutions.

Secondly, a real estate development project is distinguished by the unique characteristics of its location. A combination of the conditions and features of the land and surroundings, the legal status of the landed property, availability or otherwise of basic infrastructures and characteristics of the neighborhood, accessibility and the local property market characteristics influences its development opportunities.

Thirdly, real estate development processes are characterized by their long duration. Because of the cyclical character of the real estate market it is hard to predict construction costs, rental or sales revenues [20]. While pre-investments are made at the start of a process, the market conditions on the construction and the property market at the moment of tender or the moment of completion of the project are likely to change. This might lead to the completion of a real estate project when demand has already diminished. The market dynamics in combination with the duration of real estate development process make prognostications difficult.

Finally, real estate market indices are dynamic and can change at any given time. Hence, a real estate developer is encumbered with uncertainties associated with real estate markets. A developer has to balance an investment portfolio that includes real estate by cost cutting and delivering a structure that meets the market demands at the moment of completion inculcating flexibility and sustainability to make a project more valuable for investors with a long time horizon. Hence justifying the investment made on real estate as against investment in other alternative options.

2.5 Decision Theory and Real Estate Development Decision

In a real estate development project one has to deal with many risks that occur non-frequently, which means that probabilities cannot be readily calculated, such as by tossing coins, throwing dice or drawing cards. Neither can probabilities be assessed by recurrence of risks, such as the frequency of failure in serial industry. For both the assessment of probability and impact, decision makers in real estate development have to rely on subjective estimates. Although risk analysis techniques and decision theories are adjusted to deal with subjectivity to a certain extent the reliability of the outcomes of a risk analysis can be questioned when probability estimates are hard to make [21].

MacCrimmon and Wehrung [22] pointed out that another aspect on which the practice of real estate development differs concerns the management perspective. In case of a gamble, giving its static nature, the consequences cannot be influenced after a decision has been made. Examples of these types of decisions are gambling decisions made in a casino or decisions to buy shares. The outcome (gain or loss) of these decisions can only be awaited. However, given the dynamic nature of real estate development, risks can be influenced by preventing, recognizing and intervening in the development process.

2.6 Relevance of Decision Theory to Real Estate Development Decisions

Decision theory is found to be relevant to different fields of human endeavor ([13,23,21,3]). The real estate sector as mentioned earlier is encumbered with great risk and uncertainties; there are also other viable investment options to which funds can be committed to apart from real estate developmental projects. Hence, the need for decisions to made by the investors/developers whether individuals or institutional. Similarly in every stage of the development process, decisions had to be made to ensure a suitable and profitable end product [24].

It has been observed that factors, both quantitative and qualitative, influence decisions in real estate development projects. Since no one can make a perfect forecast, risks cannot be all together eliminated hence the need for informed decisions to be made. Alter [25] asserted that comprehensiveness of the decision contexts can be improved by investigating alternative scenarios and by examining data sensitivity. Similarly, understanding the impact of development factors, each with its own variations, can also enable real estate investors and developers to understand the risks-return profiles of such real estate and therefore be aided in making informed decisions. Sensitive factors with high impact on real estate development performance can also be identified in the decision process. Doing so allows the real estate developer to focus on control factors that influence potential causes of the impacts in order to prevent performance from falling out of the acceptable range or standard. Through informed decisions, the developer has some degree of control over the possible variation in the real estate development variables, as with the cost of construction through the choice of specification, materials, etc. Furthermore, decisions with respect to real estate development strategies based on a comprehensive grasp of the economic situation and its impact on the real property market, the product, and of the related venture scenarios would most certainly enhance the probability of having a successful real estate developmental project. Yosaporn [26] pointed out that a relevant real estate decision model or system that provides real estate developers with comprehensive data and sensitivity would minimize development and investment risks. Hence, the relevance of decision theory to real estate development decision cannot be overemphasized ([25,26,21,3,24]).

3. FINDINGS/CONCLUSION AND RECOMMENDATION

The study examined decision theory and its relevance to real estate development decisions. The study revealed that real estate development involves taking risk and is often characterized by great complexities and inherent uncertainties. Hence, the successful operation of any real estate developmental project depends upon the investment of resources in such a way as to bring in benefits or best possible returns from the investment. The study showed that since resources are limited, a choice has to be made among the various real estate development investment alternatives by evaluating their comparative merits and making decisions on the viability of such investment. Decision theory models in real estate development appraisals are used by appraisers to decide whether a proposed real estate development will be viable.

Ultimately, decision theory is very much relevant in real estate development decisions because by assessing the risks, complexities and uncertainties associated with real estate development, the decision maker is better placed to make a more informed and "better" decision.

It is recommended that real estate appraisers should familiarize themselves with the various relevant decision models appropriate for real estate development decision-making. This will help them to better serve their clients by making better decisions on viable real estate developmental projects.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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